QUALITY ASSURANCE/QUALITY CONTROL REPORT

Office of the Chief Engineer (Quality Assurance/Control) Annexure-05,
BBMP Head Office, Hudson circle Bengalore-001,
Ph.no:08022975541, E-mail ID:qualitycontrol.bbmp@gmail.com

QUALITY ASSURANCE REPORT/QUALITY CONTROL REPORT

SE/QA/PR/ 99 /2022-23, DATE: 13/4/23		
Name of Work	:	Package 02 - Consists of 5 works. "Improvements to Road and Drains of Coffee Board Layout in ward no 07" Byatarayanapura Sub Division Estimated cost 1000.00 Lakhs
Job Code	:	007-23-000003
Bill No.	:	**1st &Part Bill, Rs.2,93,99,000.00 (including GST)**
Name of Agency	:	**M/s Sri Venkateshwara Constructions, Prop. Sri Sambashiva**
Type of Test Performed	:	Bitumen Content and Gradation test as per Table 500.17 MoRTH V Revision.
Materials on which Tests Was Performed	:	1. Bituminous Concrete (Grade II)
Officers present during inspection	:	1.Sri. Santosh AE – Ward no 7 2. Sri. Somashekar AEE- Kodigehalli Sub division 3.Sri. Kiran.B. EE-Quality Assurance
Project Management Consultants/Third Party	:	**Shiprama Consulting Engineers Pvt Ltd.**
Observations	:	➢ Bitumen Content and Gradation Test was conducted by Project Management Consultants at random locations in presence of AE (Ward no 7) and AEE (Kodigehalli Sub division) along with EE of QA division . ➢ The Bitumen content & Gradation Test were conducted for BC (Grade-II). The readings and results are recorded by the PMC consultants. ➢ The Bitumen Content & Gradation Test results are tabulated and analysis of test results done by PMC is here by furnished. ➢ The location wise test results are reproduced in the tables shown below.
Test Locations	:	Location 1: 8th Cross Road, Coffee Board Layout (Near Empty Site 619/1, Opposite to # 24 sruhith , Near Junction Shiksha Shilpa Music Class) Location 2: 5th Main Road, Coffee Board Layout (Opposite to # House no 478, Opposite to # House no 482, Opposite to # House no 377 Sai Bharathi) Location 3: 5th Cross Road , Coffee Board Layout (Opposite to Dental & Orthodontic Clinic, Opposite to House no 316 New Building, Opposite to House no # 141 Shruthi bags)

13/4/23
ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

13/4/23
ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
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13/4/23
ಅಧೀಕ್ಷಕ ಅಭಿಯಂತರರು
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Table-01: Bitumen Content and gradation Test Results for 8th Cross Road, Coffee Board Layout at rando... locations

BC- (GRADE-II)

Landmark/Location	Near Empty Site 619/1	Opposite to # 24 sruhith	Near Junction Shiksha Shilpa Music Class
Description	Trial 1	Trail 2	Trail 3
1.Initial weight of sample (gms) w1	551	558	562
2. Initial weight of filter paper (gms) w2	5	5	5
3. final weight of sample after extraction (gms) w3	522	528	532
4. Final weight of filter paper (gms) w4	6	6	6
5. Weight of finess (gms) w5=(w4-w2)	1.00	1.00	1.00
6. Weight of Bitumen Extracted (gms). w6=w1-w3+w5	30.00	31.00	31.00
7. Bitumen content in % (w6/w1)x100	5.44	5.56	5.52
8.Average	5.50		

SIEVE SIZE mm	Trail 1				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	
19.00	0	0	0	100	100
13.2	0	0	0.00	100.00	90-100
9.5	90.20	90.2	17.28	82.72	70-88
4.75	100.92	191.12	36.61	63.39	53-71
2.36	90.82	281.94	54.01	45.99	42-58
1.18	18.51	300.45	57.56	42.44	34-48
0.6	55.27	355.72	68.15	31.85	26-38
0.3	30.62	386.34	74.01	25.99	18-28
0.15	35.32	421.66	80.78	19.22	12-20
0.075	57.63	479.29	91.82	8.18	4-10

SIEVE SIZE mm	Trail 2				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	
19.00	0	0	0	100	100
13.2	0	0	0.00	100.00	90-100
9.5	91.65	91.65	17.36	82.64	70-88
4.75	101.92	193.57	36.66	63.34	53-71
2.36	92.82	286.39	54.24	45.76	42-58
1.18	19.51	305.9	57.94	42.06	34-48
0.6	56.27	362.17	68.59	31.41	26-38
0.3	33.62	395.79	74.96	25.04	18-28
0.15	34.32	430.11	81.46	18.54	12-20
0.075	57.61	487.72	92.37	7.63	4-10

SIEVE SIZE mm	Trail 3				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	
19.00	0	0	0	100	100
13.2	0	0	0.00	100.00	90-100
9.5	92.30	92.3	17.35	82.65	70-88
4.75	102.95	195.25	36.70	63.30	53-71
2.36	93.82	289.07	54.34	45.66	42-58
1.18	20.52	309.59	58.19	41.81	34-48
0.6	54.27	363.86	68.39	31.61	26-38
0.3	32.61	396.47	74.52	25.48	18-28
0.15	35.33	431.8	81.17	18.83	12-20
0.075	55.51	487.31	91.60	8.40	4-10

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
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Table-02: Bitumen Content and gradation Test Results 5th Main Road, Coffee Board Layout at random locations
BC- (GRADE-II)

Landmark/Location	Opposite to # House no 478	Opposite to # House no 482	Opposite to # House no 377 Sai Bharathi
Description	Trial 1	Trail 2	Trail 3
1.Initial weight of sample (gms) w1	565	570	576
2. Initial weight of filter paper (gms) w2	5	5	5
3. final weight of sample after extraction (gms) w3	535	539	545
4. Final weight of filter paper (gms) w4	6	6	6
5. Weight of finess (gms) w5=(w4-w2)	1.00	1.00	1.00
6. Weight of Bitumen Extracted (gms). w6=w1-w3+w5	31.00	32.00	32.00
7. Bitumen content in % (w6/w1)x100	5.49	5.61	5.56
8.Average	5.55		

SIEVE SIZE mm	Trail 1				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	
19.00	0	0	0	100	100
13.2	0	0	0.00	100.00	90-100
9.5	94.10	94.1	17.59	82.41	70-88
4.75	110.82	204.92	38.30	61.70	53-71
2.36	90.52	295.44	55.22	44.78	42-58
1.18	22.51	317.95	59.43	40.57	34-48
0.6	55.28	373.23	69.76	30.24	26-38
0.3	31.62	404.85	75.67	24.33	18-28
0.15	36.35	441.2	82.47	17.53	12-20
0.075	54.65	495.85	92.68	7.32	4-10

SIEVE SIZE mm	Trail 2				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	
19.00	0	0	0	100	100
13.2	0	0	0.00	100.00	90-100
9.5	95.25	95.25	17.67	82.33	70-88
4.75	111.83	207.08	38.42	61.58	53-71
2.36	91.52	298.6	55.40	44.60	42-58
1.18	21.41	320.01	59.37	40.63	34-48
0.6	58.30	378.31	70.19	29.81	26-38
0.3	32.70	411.01	76.25	23.75	18-28
0.15	39.35	450.36	83.55	16.45	12-20
0.075	52.35	502.71	93.27	6.73	4-10

SIEVE SIZE mm	Trail 3				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	
19.00	0	0	0	100	100
13.2	0	0	0.00	100.00	90-100
9.5	89.20	89.2	16.37	83.63	70-88
4.75	115.85	205.05	37.62	62.38	53-71
2.36	93.54	298.59	54.79	45.21	42-58
1.18	20.42	319.01	58.53	41.47	34-48
0.6	50.33	369.34	67.77	32.23	26-38
0.3	30.71	400.05	73.40	26.60	18-28
0.15	40.33	440.38	80.80	19.20	12-20
0.075	59.39	499.77	91.70	8.30	4-10

13/4/23
ಸಹಾಯಕ ಅಭಿಯಂತರರು
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13/4/23
ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
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13/4/23
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Table-03: Bitumen Content and gradation Test Results 5th Cross Road, Coffee Board Layout at random loc... BC- (GRADE-II)

Landmark/Location	Opposite to Dental &Orthodontic Clinic	Opposite to House no 316 (New Building)	Opposite to ... no # 141 Shruth... bags
Description	Trial 1	Trail 2	Trail 3
1.Initial weight of sample (gms) w1	582	589	593
2. Initial weight of filter paper (gms) w2	5	5	5
3. final weight of sample after extraction (gms) w3	551	558	561.5
4. Final weight of filter paper (gms) w4	6	6	6
5. Weight of finess (gms) w5=(w4-w2)	1.00	1.00	1.00
6. Weight of Bitumen Extracted (gms). w6=w1-w3+w5	32.00	32.00	32.50
7. Bitumen content in % (w6/w1)x100	5.50	5.43	5.48
8.Average		5.47	

SIEVE SIZE mm	Trail 1 Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	Requirement as per MORTH table 500.17
19.00	0	0	0	100	100
13.2	0	0	0.00	100.00	90-100
9.5	90.35	90.35	16.40	83.60	70-88
4.75	102.85	193.2	35.06	64.94	53-71
2.36	95.53	288.73	52.40	47.60	42-58
1.18	20.46	309.19	56.11	43.89	34-48
0.6	55.60	364.79	66.21	33.79	26-38
0.3	28.50	393.29	71.38	28.62	18-28
0.15	40.32	433.61	78.70	21.30	12-20
0.075	75.12	508.73	92.33	7.67	4-10

SIEVE SIZE mm	Trail 2 Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	Requirement as per MORTH table 500.17
19.00	0	0	0	100	100
13.2	0	0	0.00	100.00	90-100
9.5	90.55	90.55	16.23	83.77	70-88
4.75	110.86	201.41	36.09	63.91	53-71
2.36	96.53	297.94	53.39	46.61	42-58
1.18	21.45	319.39	57.24	42.76	34-48
0.6	54.62	374.01	67.03	32.97	26-38
0.3	28.25	402.26	72.09	27.91	18-28
0.15	41.12	443.38	79.46	20.54	12-20
0.075	74.50	517.88	92.81	7.19	4-10

SIEVE SIZE mm	Trail 3 Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	Requirement as per MORTH table 500.17
19.00	0	0	0	100	100
13.2	0	0	0.00	100.00	90-100
9.5	89.54	89.54	15.95	84.05	70-88
4.75	120.85	210.39	37.47	62.53	53-71
2.36	99.53	309.92	55.20	44.80	42-58
1.18	22.44	332.36	59.19	40.81	34-48
0.6	54.65	387.01	68.92	31.08	26-38
0.3	27.22	414.23	73.77	26.23	18-28
0.15	40.11	454.34	80.92	19.08	12-20
0.075	73.20	527.54	93.95	6.05	4-10

13/4/23
ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ
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13/4/23
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13/4/23
ಅಧೀಕ್ಷಕ ಅಭಿಯಂತರರು
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Conclusion:

- The file containing **1st & Part** bill has been submitted for the above work to QA department on **18.03.2023** requesting for spot inspection. Engineers of QA/QC division have visited the work spot on **01.04.2023.**

During the inspection, engineer in charge of work informed that items found in the bill, have been executed by the contractor & documents were made available for inspection.

PMC team were instructed to assess the Gradation & Bitumen content for BC (Grade-II) on Asphalted road. The Bitumen Content and Gradation Tests were conducted by PMC in presence of engineer in charge of work.

From the test results furnished by PMC, it is concluded that the results of the samples collected are in accordance with the standards/ specifications mention in the IRC codes. However, the results submitted by the PMC have been reproduced here with for further needful action. The results checked by QA/QC relates only for item tested in the particular location randomly.

Further, QA/QC directs the Engineer in-charge of the work that all materials used for the work shall be inspected, tested and accepted as per the relevant specifications before incorporation in the work. The frequencies and methods of sampling and testing materials, including those required for definite purpose and not covered by MORT&H specifications shall be in accordance to the relevant IRC or BIS or AASHTO/ASTM/BS standards in order of priority.

All materials or work not conforming to the requirements of the specifications shall be considered unacceptable and rejected. The unacceptable materials or works that are rejected shall be immediately removed unless the defects are corrected and approved by the engineer in-charge of work.

The concerned Engineer in charge of the work shall follow the direction issued by Chief Commissioner Letter number dated 01.08.2022 and 14.09.2022 and take necessary action as appropriate in accordance with the law.

Note: -

This report by QA/QC is pertaining to the work carried out in **1st & part bill** only. Therefore, further QA/QC reports shall be obtained for the items of work carried out in future Running Account bill / Final bill.

Safety precautions shall be taken at work spot to prevent any mishap, injuries or loss of life to general public and construction workers according to guidelines laid down in code of practices.

Engineer in charge of work shall obtain requisite approval and Implement traffic management plan prior to commencement of work.

Engineer in charge of work shall display details of work, work code, cost of project, start and completion date, and information of Engineer in charge of work with contact numbers at work spot.

Engineer in charge of work and Agency shall ensure that if any damages or defects occur pertaining to the executed work within the Defect Liability period (DLP), The same shall be rectified immediately on top priority without fail.

13/4/23

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
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13/4/23

ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

13/04/23

ಅಧೀಕ್ಷಕ ಅಭಿಯಂತರರು
ಗುಣನಿಯಂತ್ರಣ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

Location 1: 8th Cross Road, Coffee Board Layout (Near Empty Site 619/1, Opposite to # 24 sruhith , Near Junction Shiksha Shilpa Music Class)

	Decimal	DMS
Latitude	13.051263	13°3'4" N
Longitude	77.606466	77°36'23" E

2023-04-01(Sat) 01:56(pm)

	Decimal	DMS
Latitude	13.049711	13°2'58" N
Longitude	77.606269	77°36'22" E

2023-04-01(Sat) 02:06(pm)

13/4/23
ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ವಿಭಾಗ
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13/4/23
ಸಹಾಯಕ ಅಭಿಯಂತರರು
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13/04/23
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ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

Location 2: 5th Main Road, Coffee Board Layout (Opposite to # House no 478, Opposite to # House no 482, Opposite to # House no 377 Sai Bharathi)

13/4/23 13/4/23 13/4/23

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು ಅಧೀಕ್ಷಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ವಿಭಾಗ ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

	Decimal	DMS
Latitude	13.049208	13°2'57" N
Longitude	77.606527	77°36'23" E

2023-04-01(Sat) 02:24(pm)

	Decimal	DMS
Latitude	13.049297	13°2'57" N
Longitude	77.60574	77°36'20" E

2023-04-01(Sat) 02:34(pm)

13/4/23
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ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ
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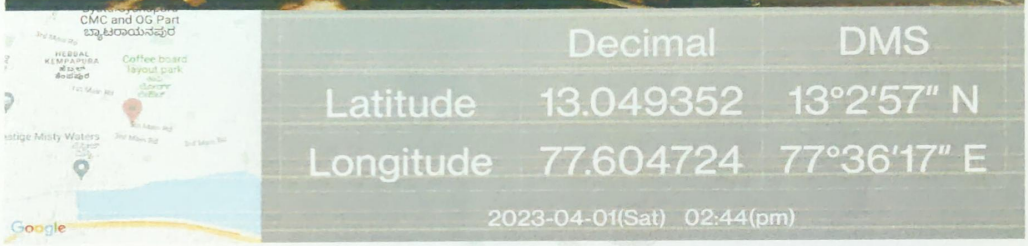
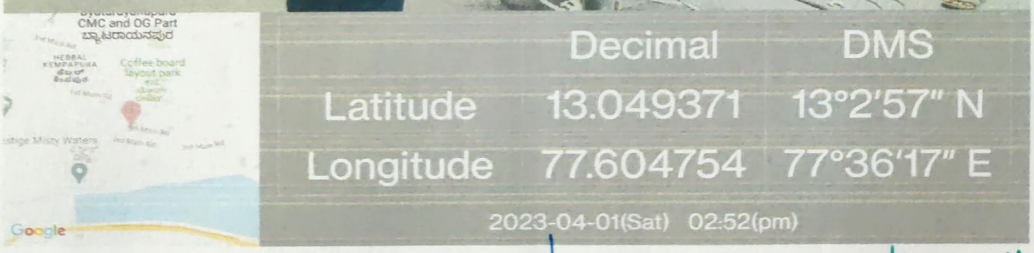
13/4/23
ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

13/04/23
ಅಧೀಕ್ಷಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

Location 3: 5th Cross Road , Coffee Board Layout (Opposite to Dental & Orthodontic Clinic, Opposite to House no 316 New Building, Opposite to House no # 141 Shruthi bags)





13/4/23

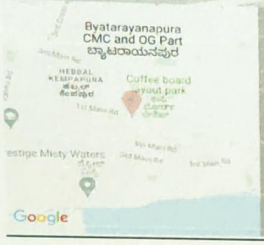
ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

13/4/23

ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

13/04/23

ಅಧೀಕ್ಷಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ



	Decimal	DMS
Latitude	13.050901	13°3'3" N
Longitude	77.60446	77°36'16" E

2023-04-01(Sat) 02:57(pm)

13/4/23

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

13/4/23

ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

13/4/23

ಅಧೀಕ್ಷಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ